

3

Electronic Health Records in the Physician Office

CHAPTER OUTLINE

Patient Flow in the Physician Practice

- Step 1. Pre-Visit: Appointment Scheduling and Information Collection
- Step 2. Patient Check-in and Payment Collection
- Step 3. Rooming and Measuring Vital Signs
 - Patient Examination and Documentation
- Step 4. Patient Checkout
- Step 5. Post-Visit: Coding and Billing
 - Post-Visit: Reviewing Test Results

Coding and Reimbursement in Electronic Health Records

Computer-Assisted Coding

Clinical Tools in the Electronic Health Record

Decision-Support Tools

Tracking and Monitoring Patient Care

Screening for Illness or Disease

Identifying at-Risk Patients

Managing Patients with Chronic Diseases

Improving the Quality and Safety of Patient Care with Evidence-Based Guidelines

E-Prescribing and Electronic Health Records

Keeping Current with Electronic Drug Databases

Increasing Prescription Safety

Saving Time and Money

LEARNING OUTCOMES

After completing this chapter, you will be able to define key terms and:

1. List the five steps of the office visit workflow in a physician office.
2. Discuss the advantages of pre-visit scheduling and information collection for patients and office staff.
3. Describe the process of electronic check-in.
4. Explain how electronic health records make documenting patient exams more efficient.
5. Explain what occurs during patient checkout.
6. Explain what two events take place during the post-visit step of the visit workflow.
7. Describe the advantages of computer-assisted coding.
8. List three decision-support tools the EHRs contain to provide patients with safe and effective health care.
9. List four important safety checks that an EHR's e-prescribing feature can perform when a physician selects a new medication for a patient.

chronic diseases
clinical guidelines
computer-assisted coding
decision-support tools

disease management (DM)
formulary
point-of-care

The information in this chapter will enable you to:

- » Understand the ways in which EHR enhances each step of the office visit.
- » Understand how clinical tools, a feature of EHRs, assist physicians in making medical decisions and managing patients with chronic diseases.
- » Understand how electronic documentation leads to more timely reimbursement for the practice.
- » Understand how using EHR tools to monitor patients' compliance with recommended wellness guidelines can improve the quality of patient care.

Why This Chapter Is Important to You



The transition from paper records to electronic health records (EHRs) represents a fundamental change in the way a physician office operates and interacts with patients. Everyone who works in the office, whether in a clinical or an administrative position, in the front office or the back office, will have to learn a new way of doing things. All tasks related to providing health care to patients will be entered, stored, and maintained in a computer-based EHR. Consider how a few common tasks are different in an office that has fully implemented an EHR:

- » There is no need to pull a patient's chart the day before an appointment. *All the information that was stored on the paper chart is in the computer and can be accessed instantly.*
- » There is no need to print a superbill for a patient on the day of the appointment. *The provider will document the office visit in the computer, which will generate preliminary codes based on the electronic documentation.*

- There is no need to handwrite a patient's vital signs on paper. *Vital signs will be automatically entered in the computer by digital medical devices.*
- There is no need to manually enter procedures and diagnoses from a superbill into the office billing system. *Procedure and diagnosis codes generated during the office visit will be reviewed and finalized by a coding specialist and will automatically become part of the billing module of the EHR.*
- There is no need to handwrite most prescriptions. *Prescriptions will be entered in the computer and electronically transmitted to a pharmacy, with a few exceptions.*
- There is no need to wait for a patient's test results to arrive via a fax machine or in the mail. *Laboratory and radiology results are transmitted electronically to the physician and become part of the patient's EHR.*

In this chapter, we will compare and contrast patient flow in a paper-based office and in an office that has an electronic health record (EHR). The processes described in this chapter reflect an office that has a fully implemented EHR. In reality, many practices are using a combination of electronic and paper systems, known as hybrid systems. Eventually, almost all practices are expected to make the shift to a completely electronic environment. In addition to describing differences in the patient flow, the chapter also focuses on three key features of EHRs: electronic documentation and coding, clinical tools that make it easier for the physician to provide patients with the highest quality of care, and electronic prescribing of medications, referred to as e-prescribing. While the examples in the chapter refer to a physician practice, they are also relevant for an outpatient clinic at a hospital and other ambulatory care settings.

Patient Flow in the Physician Office

Patient flow refers to the progression of patients from when they enter the practice's system by scheduling an appointment until they exit the system by leaving the office after a physician visit. Between entering and exiting, many clinical and administrative events take place, including checking the patient in, collecting payment for services, rooming the patient, examining the patient, prescribing medications, ordering tests, and checking the patient out at the end of the visit. The following steps occur before, during, and after an office visit, regardless of whether the office is using an EHR or paper for record-keeping (see Figure 3-1).

Step 1. Pre-visit: Appointment scheduling and information collection

Step 2. Patient check-in and payment collection

Step 3. Rooming, measuring vital signs, and patient examination and documentation

Step 4. Patient checkout

Step 5. Post-visit: Coding and billing, and reviewing test results

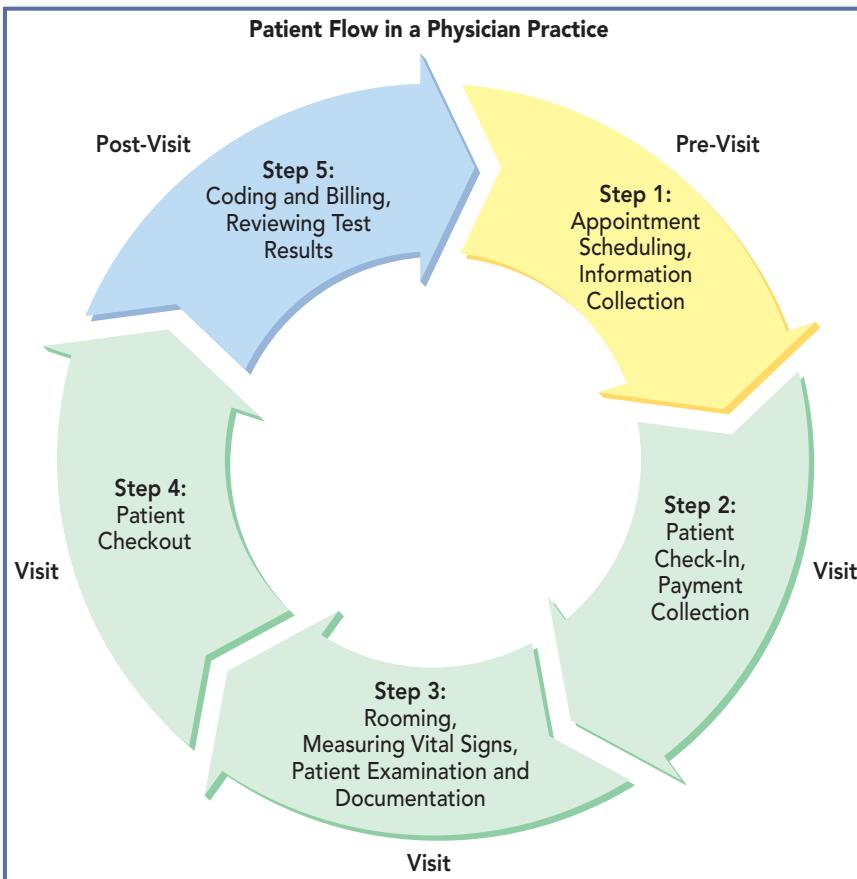


Figure 3-1

The flow of activity in a physician office.

STEP 1. PRE-VISIT: APPOINTMENT SCHEDULING AND INFORMATION COLLECTION

PAPER	ELECTRONIC
1. Patient calls for appointment.	1. Patient schedules appointment on the Internet.
2. Front desk staff member schedules appointment and confirms insurance information.	2. Patient completes information forms online.

In a practice with an EHR, patients may have the option of making appointments on the office's website or using the traditional method of telephoning the office. The ability to make appointments online reduces the amount of time the front desk staff must spend scheduling patients, since appointments are made without their assistance. On the practice website, patients view a calendar with available openings and select a time slot. This information is transmitted to the office and if approved, the patient receives an e-mail confirmation.

Medical office websites also offer new ways to collect patient information. Patients have the option of entering information about themselves before their scheduled office visits. The amount of information collected varies greatly. Some websites collect only demographic and insurance

information, while others include questions about medical history, current condition, and lifestyle.

These automated options have several advantages for patients, office staff, and physicians. Patients new to the practice do not have to arrive at the office early to complete paperwork. The front desk staff member does not have to manually enter information from handwritten forms into the billing program and file forms in the patient chart. The physician has a chance to review information about the patient prior to the visit, which reduces the amount of time spent documenting the patient's medical history and preventive care status during the visit.

STEP 2. PATIENT CHECK-IN AND PAYMENT COLLECTION

PAPER	ELECTRONIC
1. Staff member pulls patient chart and prints superbill for today's appointment.	1. Patient arrives and checks in electronically at a computer in the waiting room.
2. Patient arrives and signs in.	2. Patient confirms demographics and billing information on a computer.
3. Front desk verifies demographics and billing information with patient.	3. EHR checks insurance eligibility.
4. Patient returns to waiting room.	4. Patient enters copayment via computer or pays at front desk.
5. Front desk checks eligibility by Internet or telephone.	5. Medical assistant (MA) sees alert on EHR screen that patient is ready to be roomed.
6. Patient called to front desk to make copayment.	6. MA rooms the patient.
7. Patient returns to waiting room.	
8. Front desk notifies the medical assistant (MA) that the patient is ready to be roomed; places the chart, superbill, and labels in a tray.	
9. MA takes the papers from the tray and rooms the patient.	

Some physician practices with EHRs offer electronic check-in. Electronic check-in allows patients access to a computer in a private area of the waiting room. When patients arrive for their visits, they sit at the computer and confirm address, phone number, and billing and other information. Since the computer is linked to the Internet, the EHR checks insurance eligibility in real time. Once eligibility is verified, patients are prompted to enter their copayments online, using credit or debit cards or checking accounts. Patients who are not comfortable paying online have the option of paying at the front desk. Once the patient checks in on the computer, the front desk is notified that the patient has arrived and is ready to see the doctor (see Figure 3-2).

Patient Check-in: | Duncan, Emily | CON |

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Figure 3-2

A patient check-in screen.

Electronic check-in offers several benefits, including:

- Shorter waiting times for patient check-in
- No need to file paper forms in a patient chart
- Fewer errors, since information is entered once by the patient, rather than by the patient plus by the person who inputs the information in the billing program

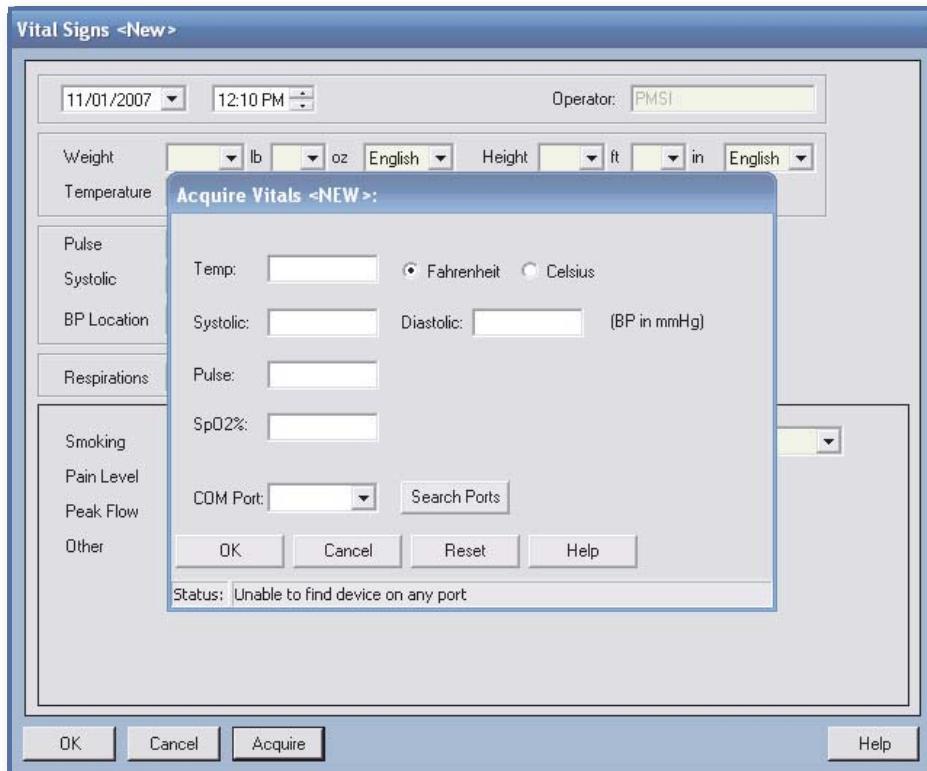
STEP 3. ROOMING AND MEASURING VITAL SIGNS

PAPER	ELECTRONIC
1. MA checks vital signs.	1. MA checks vital signs.
2. MA asks the reason for the visit.	2. MA asks the reason for the visit.
3. MA verifies medications and allergies.	3. MA verifies medications and allergies.
4. MA documents findings on face sheet in chart.	4. MA documents findings in EHR via computer in exam room.
5. MA leaves the room and places patient chart in pocket on exam room door, flips colored flag on wall.	5. EHR sends an alert to physician that patient is ready for exam.
6. Physician walks down hallway and notices that patient is ready to be seen.	

After the patient is escorted to an exam room, a member of the clinical team, such as a medical assistant, checks the patient's vital signs. Some offices use digital devices that measure the vital signs and transmit them directly into the EHR (see Figure 3-3 on page 76).

Figure 3-3

A screen where a patient's vital signs are entered, with options to acquire data directly from digital measuring devices.



The MA also gathers information relevant to the day's visit, including the chief complaint, medical history, and information about allergies and medication. The MA enters this information in the EHR while in the room with the patient. Once the MA is finished entering the data, the provider is notified that the patient is ready and can review information about the patient from his or her desk before entering the exam room.

STEP 3. PATIENT EXAMINATION AND DOCUMENTATION

PAPER	ELECTRONIC
1. Provider reviews face sheet in paper chart on door.	1. Provider reviews patient record in EHR.
2. Provider enters exam room.	2. Provider enters exam room.
3. Provider reviews MA documentation.	3. Provider examines patient.
4. Provider examines patient.	4. Provider documents visit in EHR.
5. Provider jots visit notes on superbill.	5. Provider enters needed prescriptions and requisitions for tests in EHR.
6. Provider writes needed prescriptions and requisitions for tests.	
7. Provider hands the patient orders, prescriptions, and superbill.	

Figure 3-4

Summary of a patient's major medical problems.

During an office visit, the provider may want to see a summary of the patient's past problems, history, visits, tests, procedures, and medications, all while in the exam room with the patient. The EHR provides easy access to each of these major content areas, usually all from one screen (see Figure 3-4). Trying to review this information with a paper chart that contains many pages and forms would be difficult and time-consuming. The EHR lets the provider locate and review specific information in seconds.

Clinical Documentation Components

The clinical information contained in documentation of a patient visit is the same as with a paper-based system. EHRs contain areas in which a provider details the clinical components of an examination, including the following information:

Vital signs: Measurements of a patient's temperature, respiratory rate, pulse, and blood pressure.

Chief complaint: A brief description of the patient's current problem in his or her own words.

Progress notes: Notes documenting the care delivered to a patient, and the medical facts and clinical thinking relevant to diagnosis and treatment.

Past medical history (PMH): The patient's history of medical problems, including chronic conditions, surgeries, and hospitalizations. This should include any illness (past or present) for which the patient has received treatment.

Family history (FH): The medical events among members of the patient's family, including the ages, living status, and diseases of siblings, children, parents, and grandparents. This includes diseases related to the chief complaint as well as any hereditary diseases.

Social history (SH): Information about the patient's tobacco use, alcohol and drug use, sexual history, relationship status, and other significant social facts that may contribute to the care of the patient.

Allergies: A list of the patient's known allergies, including reactions to each one

Medication list: Includes all currently prescribed medications as well as over-the-counter and nontraditional therapies. Dosage and frequency should be noted.

HPI (history of present illness): A description of the course of the present illness, including how and when the problem began, up to the present time. It includes everything related to the illness or condition, including aggravating and alleviating factors, associated symptoms, previous treatment and diagnostic tests, related illnesses, and risk factors.

ROS (review of systems): An inventory of body systems in which the patient reports signs or symptoms he or she is currently having or has had in the past.

Diagnosis and assessment: The physician's thinking about the cause of patient's problem as well as any tests performed to come to this determination.

Plan and treatment: The physician's thinking about the intervention that will be necessary to cure or manage the patient's condition, including medications, procedures, and lifestyle changes.

Documenting a Patient Encounter

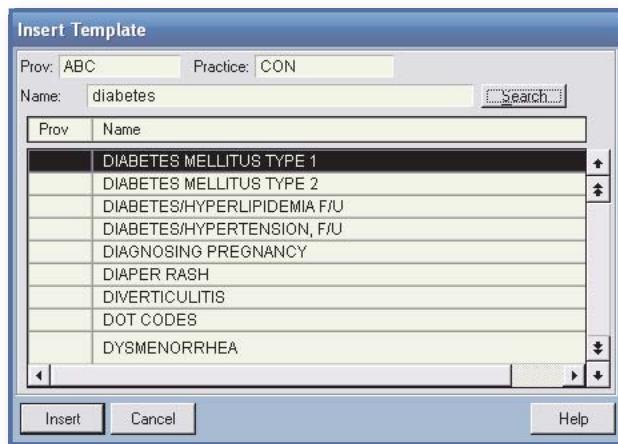
point-of-care setting in which a physician makes decisions about a patient's illness and treatment.

In a traditional paper-based office, providers often document patient encounters in between seeing patients or at the end of the day. Electronic health records contain tools that make documenting patient encounters more efficient for clinicians. While these tools vary from one program to another, most EHRs offer the option of documenting the visit at the point-of-care. The **point-of-care** is the setting in which a physician makes decisions about the nature of a patient's illness and the best course of treatment.

Most EHRs offer several options for documenting patient visits. Providers enter data during the patient visit by typing in free text, using voice recognition software, or by responding to templates that contain commonly used clinical words, phrases, and symptoms. With a template, the physician responds to prompts on the computer during the patient examination. The EHR then uses these responses to create a clinical note. The templates are specific to the type of visit (routine physical, immunization) or to the specific disease (hypertension, diabetes). Figure 3-5 illustrates a sample list of templates, while Figure 3-6 shows a template inserted in a progress note.

Figure 3-5

Screen with a list of templates for documenting a patient encounter.



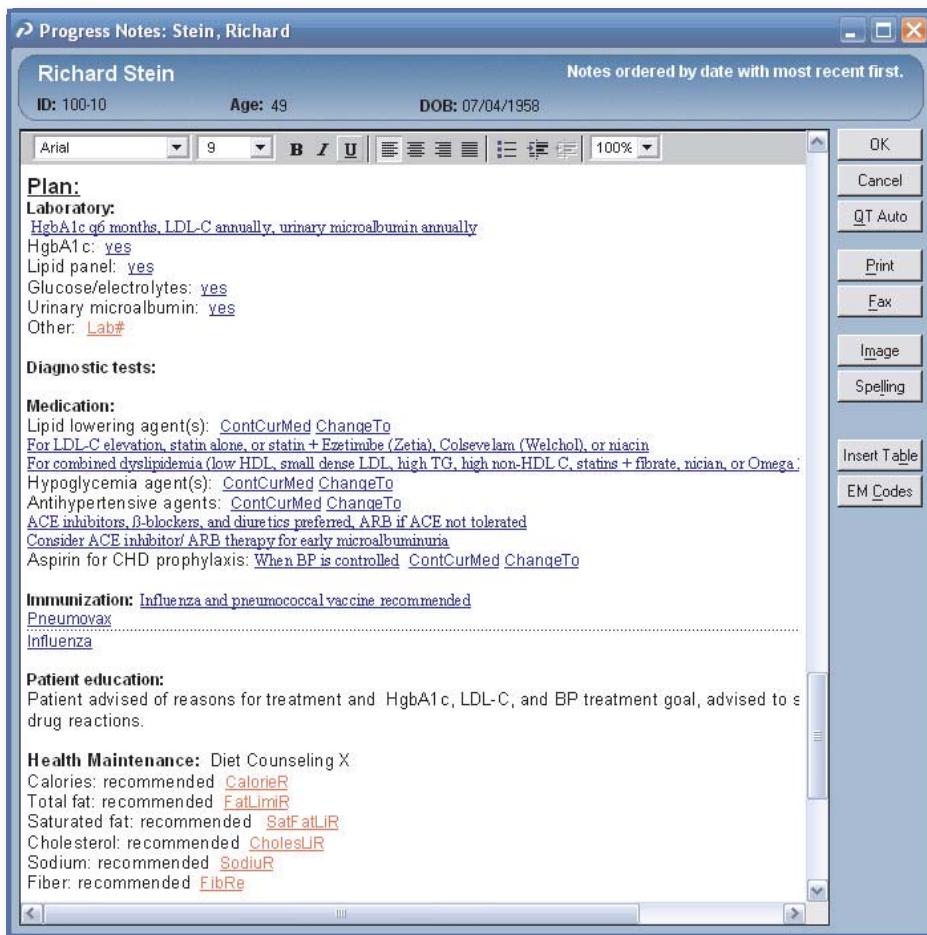


Figure 3-6

A partial view of a template for documenting an encounter for a patient with diabetes mellitus type 2.

Documenting encounters in EHRs offers several advantages over paper-based techniques. Since the provider enters the data while with the patient, information is less likely to be left out or forgotten, as sometimes happens when doctors record their observations and findings later. In addition, without paper chart pulls and filing and without the need for transcription of physician notes, costs are reduced. Another advantage is that physician notes are available as soon as the office visit has ended, instead of twenty-four to forty-eight hours after the visit. This makes it possible to include a complete, up-to-date patient record when referring a patient to another provider, such as a specialist.

Clinical Tools

EHRs offer a number of features that make it easier for the clinician to provide patients with quality care. These clinical tools allow doctors to access electronic databases that summarize the latest evidence-based research, detail national treatment and screening guidelines, and make overseeing care of patients with chronic diseases easier. Clinical tools allow physicians to manage large quantities of rapidly changing health information, bringing data to the providers at the time of medical decision making. The tools are becoming more and more important because the amount of information in clinical medicine is growing so quickly that providers are hard-pressed to stay current in their field. You will learn more about these tools later in this chapter.



Clinical Documentation

FH—Family History

The medical events among members of the patient's family, including the ages, living status, and diseases of siblings, children, parents, and grandparents.

H&P—History and Physical

Documentation of the clinical components of an examination.

HPI—History of Present Illness

A description of the course of the present illness, including how and when the problem began, up to the present time.

PMH—Past Medical History

The patient's history of medical problems, including chronic conditions, surgeries, hospitalizations, and so on.

ROS—Review of Systems

An inventory of body systems in which the patient reports signs or symptoms he or she is currently having or has had in the past.

SH—Social History

Information about the patient's tobacco use, alcohol and drug use, sexual history, relationship status, and other significant social facts that may contribute to the care of the patient.

SOAP—Subjective, Objective, Assessment, Plan

A documentation format in which patient encounter information is grouped into subjective, objective, assessment, and plan categories.

Physician Order Entry

Once a physician is finished examining a patient, it may be necessary to order tests or medications as part of diagnosing or treating the patient's condition. EHRs allow doctors to order tests without the use of traditional paper forms (see Figure 3-7). Some EHRs include built-in standard order sets based on the provider's specialty or on a specific disease.

Prescriptions can also be ordered electronically. Instead of writing a prescription on a separate prescription pad and then documenting the medication in a patient's chart, the prescription is entered in the EHR and transmitted to the patient's pharmacy. As a result, the prescription is ready when the patient arrives at the pharmacy. EHRs contain additional prescribing features that are intended to prevent errors and enhance patient safety (see "e-Prescribing and Electronic Health Records" later in this chapter).

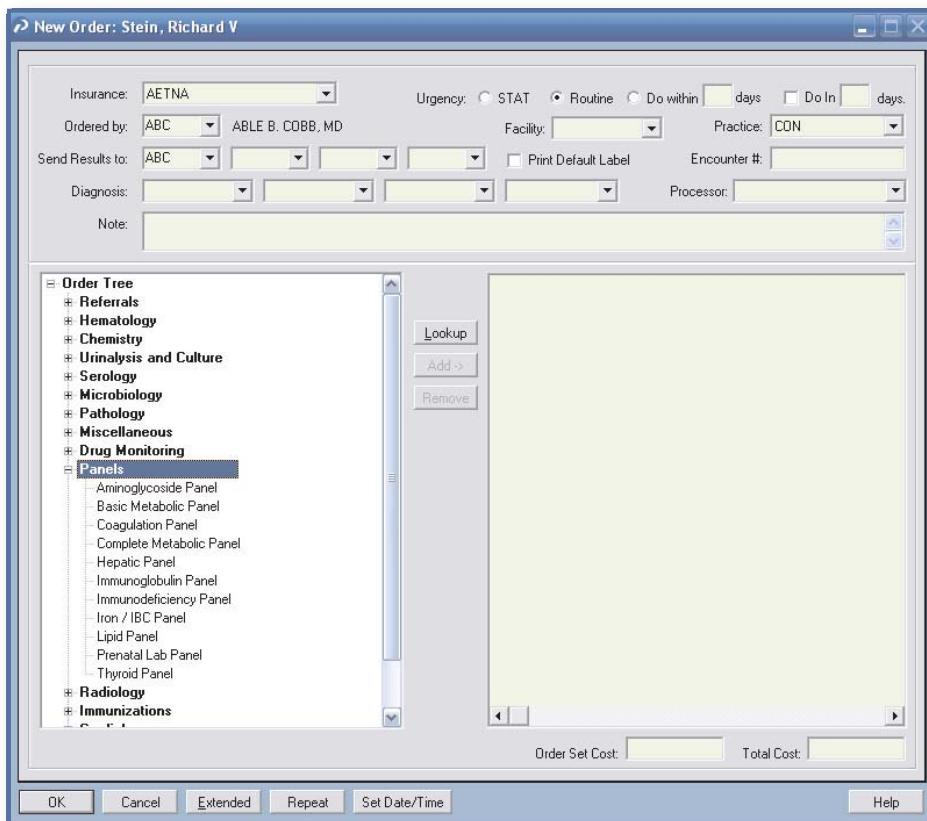


Figure 3-7

An order entry screen showing a list of built-in orders.

STEP 4. PATIENT CHECKOUT

PAPER	ELECTRONIC
1. Patient hands superbill to front desk staff member.	1. Patient stops at front desk to pick up copies of orders, prescriptions, and educational materials.
2. Staff member verifies the charges and collects any payment due.	2. Front desk staff member reviews EHR and collects any payment due.
3. Staff member schedules any follow-up appointments.	3. Staff member schedules any follow-up appointments.
4. Patient leaves the office.	4. Patient leaves the office.

In an office with an EHR, all test orders, prescriptions, and educational materials are waiting for the patient at the checkout desk. The front desk staff member reviews the billing screen in the EHR to see if any additional payment is due and schedules any follow-up appointments before the patient leaves.

STEP 5. POST-VISIT: CODING AND BILLING

PAPER	ELECTRONIC
1. Provider returns to office and dictates notes on patient visit.	1. Coder reviews procedure, visit, and diagnosis codes assigned by EHR based on provider documentation; after review, codes are automatically sent to billing module of EHR.
2. Outside agency transcribes dictation and sends to physician's office.	2. Billing staff member reviews visit information and submits electronic claim.
3. Physician reviews transcribed visit notes.	
4. Patient chart and superbill forwarded to billing staff.	
5. Coder reviews provider documentation and assigns procedure, visit, and diagnosis codes.	
6. After review, coder writes codes on superbill and places it in tray for billing staff.	
7. Billing staff member enters visit information in practice management system and submits electronic claim.	

In a paper-based environment, the coding staff member reads and evaluates the provider's documentation to determine the procedures performed by the provider and the patient's diagnoses. Coders translate words in the documentation into HIPAA-mandated codes that are then submitted to third-party payers for reimbursement. The payers review the claims and decide reimbursement for services based on the codes, looking for a logical relationship between diagnosis and procedure to justify the medical necessity of the services billed.

Most EHRs have a feature that automates one or more aspects of the coding process. The level of coding assistance varies from one program to another. The basic systems include searchable electronic versions of coding references, while the more sophisticated programs automatically assign codes based on information in the provider's electronic documentation (see Figure 3-8). These codes are then checked for accuracy by a coding specialist and included in electronic claims.

The billing staff member creates electronic claims and transmits them to payers for reimbursement. Some practices use a practice management system (PMS) that is linked to the EHR; others use a comprehensive EHR that includes billing features. There is more information about how electronic systems are used for coding and billing later in this chapter.

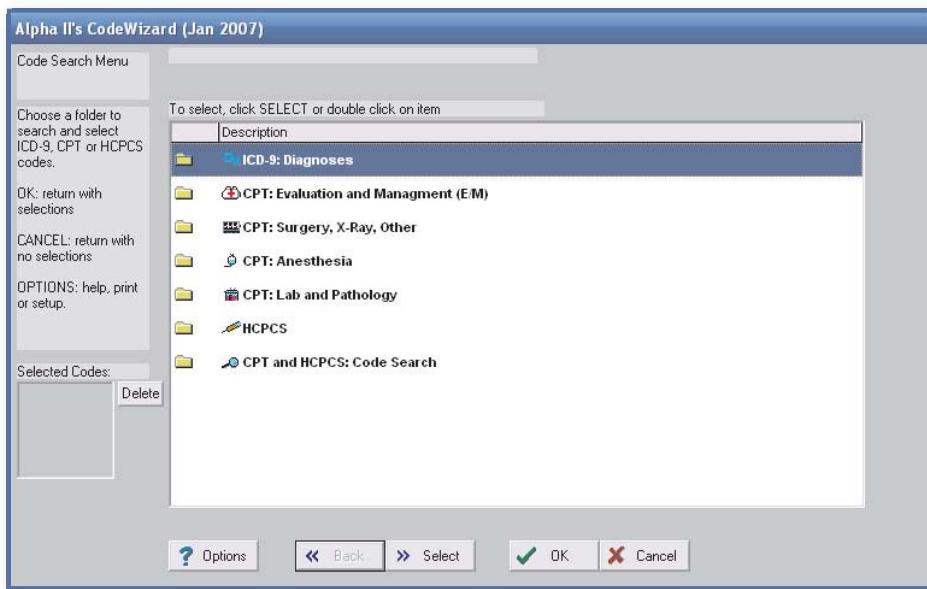


Figure 3-8

Searchable electronic database of codes accessed from an EHR.

STEP 5. POST-VISIT: REVIEWING TEST RESULTS

PAPER	ELECTRONIC
1. Locate patient's chart.	1. Alert appears on MA screen that patient's lab results have arrived; if results are abnormal, physician is sent an immediate alert.
2. Attach lab results sheet to top of chart.	2. Physician reviews results, electronically signs them, and forwards to MA.
3. Route chart to physician for review.	3. MA telephones patient with follow-up instructions.
4. Physician reviews, signs, and adds note for follow-up request.	4. MA documents phone call in EHR.
5. Chart placed in physician outbox, waits to be routed to MA inbox.	
6. MA telephones patient with follow-up instructions.	
7. MA documents phone call in patient chart.	
8. Chart with added lab results and physician's notes filed.	

Incoming results from labs and radiology facilities are received by the practice EHR (see Figure 3-9 on page 84). Clinical staff, such as the medical assistant, nurse, and physician, are notified that the results have been received even if there are no abnormal values. Any abnormal results are flagged, and the provider automatically receives an alert on the

Figure 3-9

Screen displaying laboratory results in an EHR.

EHR screen. The current and historical results can be viewed in graphical format, making it easier to see trends in the values over time.

Electronically entering and tracking laboratory and radiology tests has several advantages:

- There is no need to pull a patient chart to file the result and then to route the chart to the physician. This saves time and money, since no staff members are locating, routing, and filing paper charts.
 - Physicians can view the results when and where they are needed, which can result in quicker diagnosis and treatment of the medical problem.
 - Electronic test ordering and results management also reduces the number of duplicate tests, since physicians can determine whether a test has already been ordered. This helps lessen the costs and inconvenience associated with redundant testing.

Coding and Reimbursement in Electronic Health Records

Every service submitted for payment must be documented in the patient's medical record, including medical care, diagnostic tests, consultations, surgeries, and other services eligible for payment. Documentation is directly linked to the financial health of the practice. To be reimbursed, providers must document each service provided to the patient. If a treatment is given to a patient and the provider fails to document it, the service should not be billed. Incomplete or inaccurate records may result in claim denials or may even lead to an investigation as the federal government steps up its efforts to identify and reduce fraud.

Coding is the process of applying the mandatory HIPAA code sets—CPT (Current Procedural Terminology, Fourth Edition), HCPCS (Healthcare Common Procedure Reporting System), and ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification)—to diagnostic and procedural information in the medical record for reporting on health care claims. Whether physicians are reimbursed for the services they provide is directly linked to the codes submitted to the payer on the insurance claim. When a payer receives a claim, the codes are reviewed.

>> Case Study

A PATIENT OFFICE VISIT

Note to the student: This is one of a number of case studies illustrating the differences between a paper-based medical office and an electronic medical office. These case studies will take you through many of the everyday events in a medical office. This particular case focuses on chart preparation in a large cardiology practice.

Susan is a medical assistant working in a large, busy cardiology practice in suburban Philadelphia. The practice consists of eleven individual sites scattered throughout the Philadelphia area. Susan works at the main site in the hospital's medical office building. Her responsibilities include taking patients to exam rooms on arrival, taking and recording vital signs and weight, ensuring that the proper documentation is on the chart and available at the time of the visit, performing ECGs, and assisting with prescription refills.

Until recently, the practice "drop-filed" chart documents. This means that when paperwork came into the practice, the document was simply dropped into the chart without regard to what type of document it was or where in the chart it belonged. The transcription of dictation was performed in India and was sent via secure messaging to a database housed at the main practice site. Errors occurred when the dictation was indexed in a database, including missing dictation, dictation going to the wrong patient's chart, and typographical errors in the dictation itself.

Six months ago, the practice implemented an EHR. After about three months of upheaval, the practice has now stabilized.

Today, Susan is assisting in the care of Clara Baker. Ms Baker is a sixty-eight-year-old woman who recently had an angioplasty procedure to open a partially blocked coronary artery. She is here today for follow up.

Susan uses the stylus on her tablet PC to double click on Clara Baker's name in the schedule, and Ms. Baker's chart automatically appears, open to the summary page. The summary page includes an updated problem list, an updated medication list, a list of all the documentation in Ms. Baker's chart by type of document, and a flow sheet with all pertinent lab studies listed by type. The summary sheet is updated in real time when the provider documents the visit, so it is current.

West Side Medical Associates

About the Clinic

Clinic name: Suburban Philadelphia Cardiology

Specialty: Cardiology

Location: Main Line, PA

About the providers: 58 physicians, 5 nurse-practitioners

The physicians perform invasive and noninvasive diagnostic testing and intervention as well as electrophysiology and vascular procedures and surgeries.

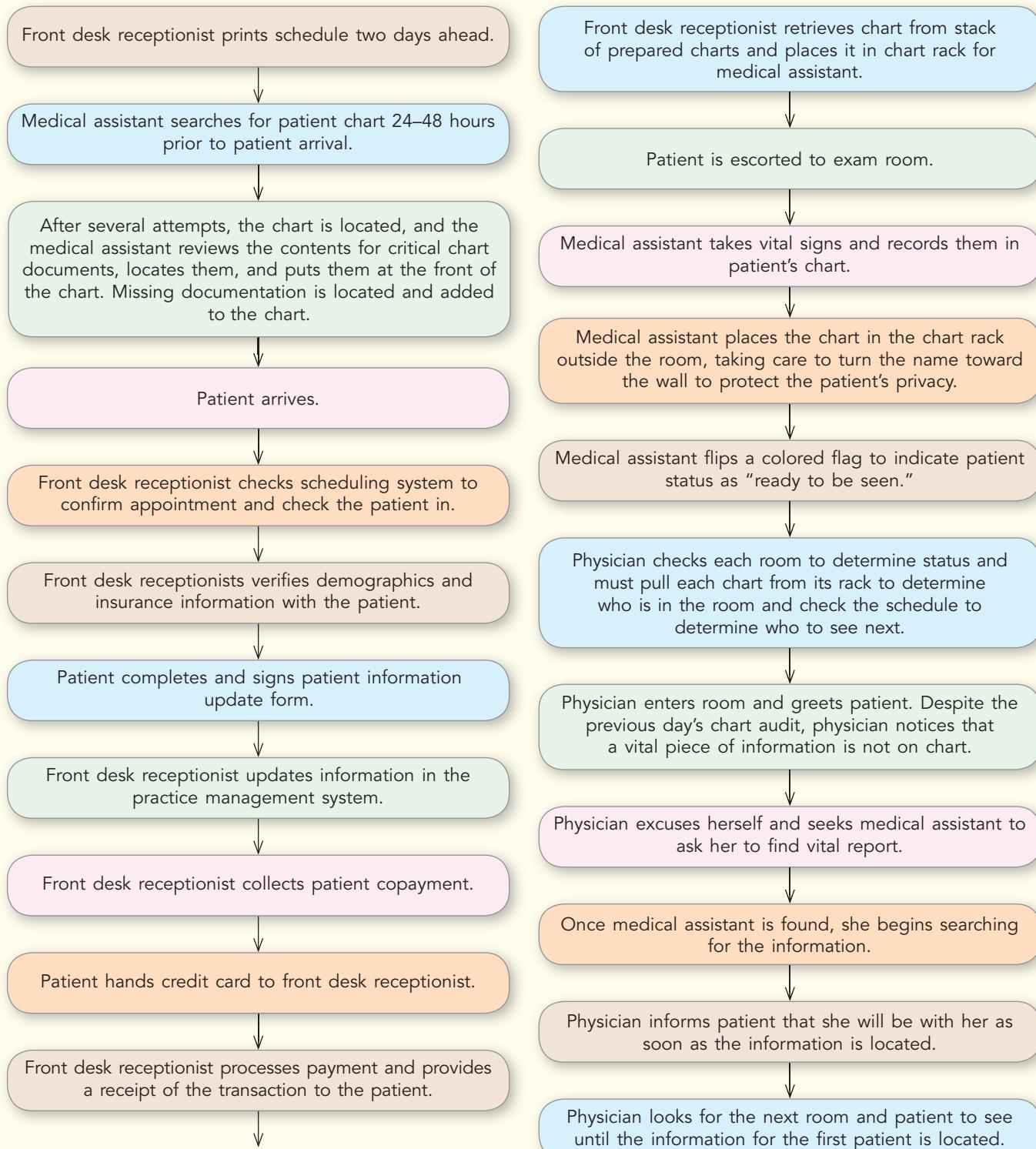
Susan takes Ms. Baker's pulse, blood pressure, and temperature using a Welch Allyn vital signs machine, and the readings are automatically transferred to the office visit chart note for today. Susan also weighed Ms. Baker on a digital scale that automatically transferred the measurement to the chart. Susan was able to chat with Ms. Baker and congratulate her on the five pounds she has lost, and Ms. Baker said that her best friend at church had just gone through the same procedure and was experiencing a poor outcome. Susan added this to an alert note, which Dr. Mary Baird read before she came into the room.

When asked how EHR has changed her work life, Susan said, "Six months ago I had to spend my time between 3 and 5 P.M. preparing charts for the next day. I had to first find them, then make sure everything needed for the visit was available: lab results, ECGs, and the rest. Now I spend that time returning patient phone calls and doing work from today, like completing referral forms and helping patients make appointments for studies requested by the doctor. I am happier, the doctor is happier, and most importantly the patient is happier." The EHR and the digital devices for taking vital signs allow Susan to chat with patients and learn about social issues that may affect their well-being. The office is so efficient now that there are three more office visit appointments on each provider's schedule. Susan also states that patients seem happier and that there are fewer complaints.

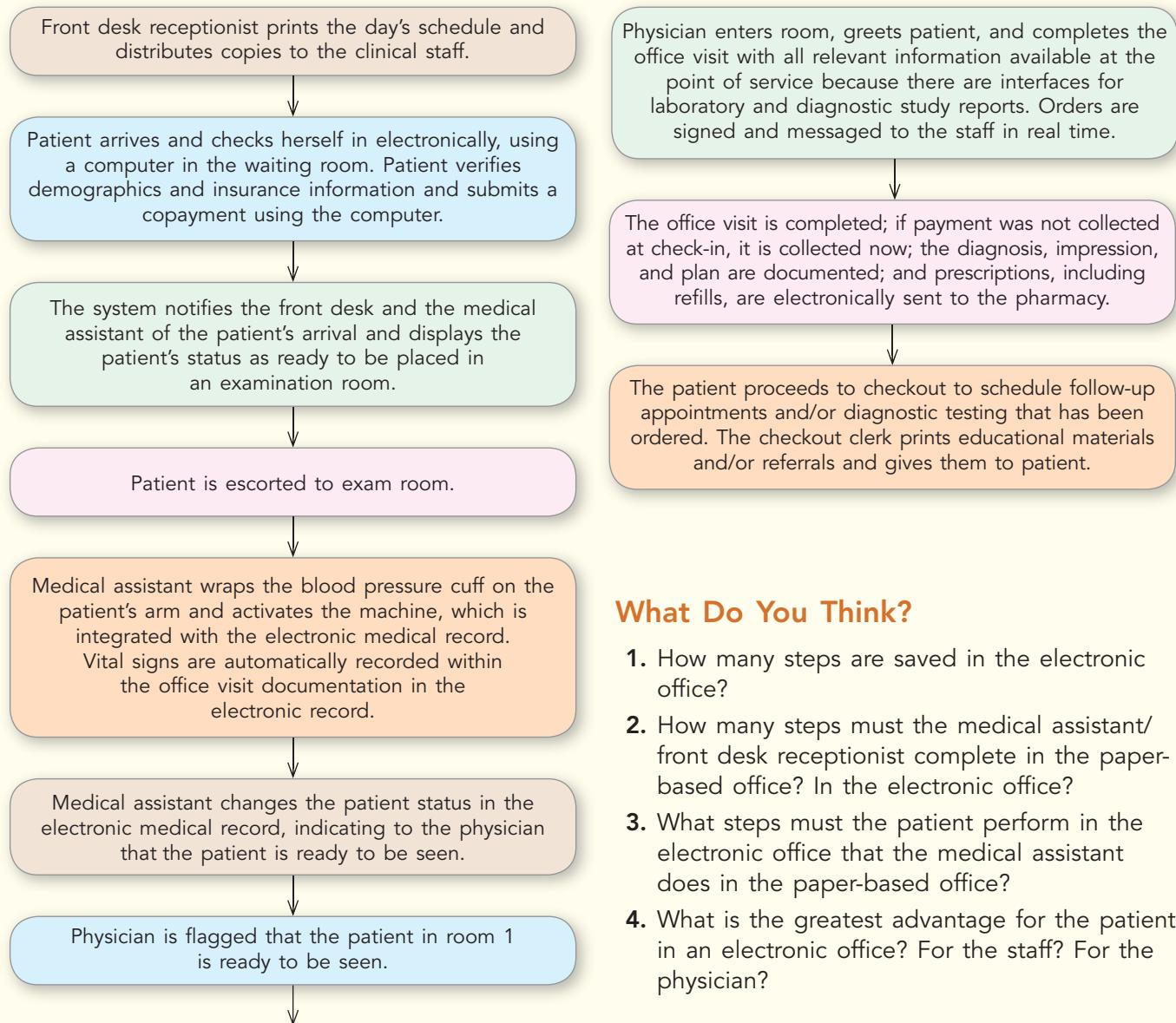
—continued

Case Study

Preparing for a Patient Visit in a Paper-Based Office



Preparing for a Patient Visit in an Office with Electronic Health Records



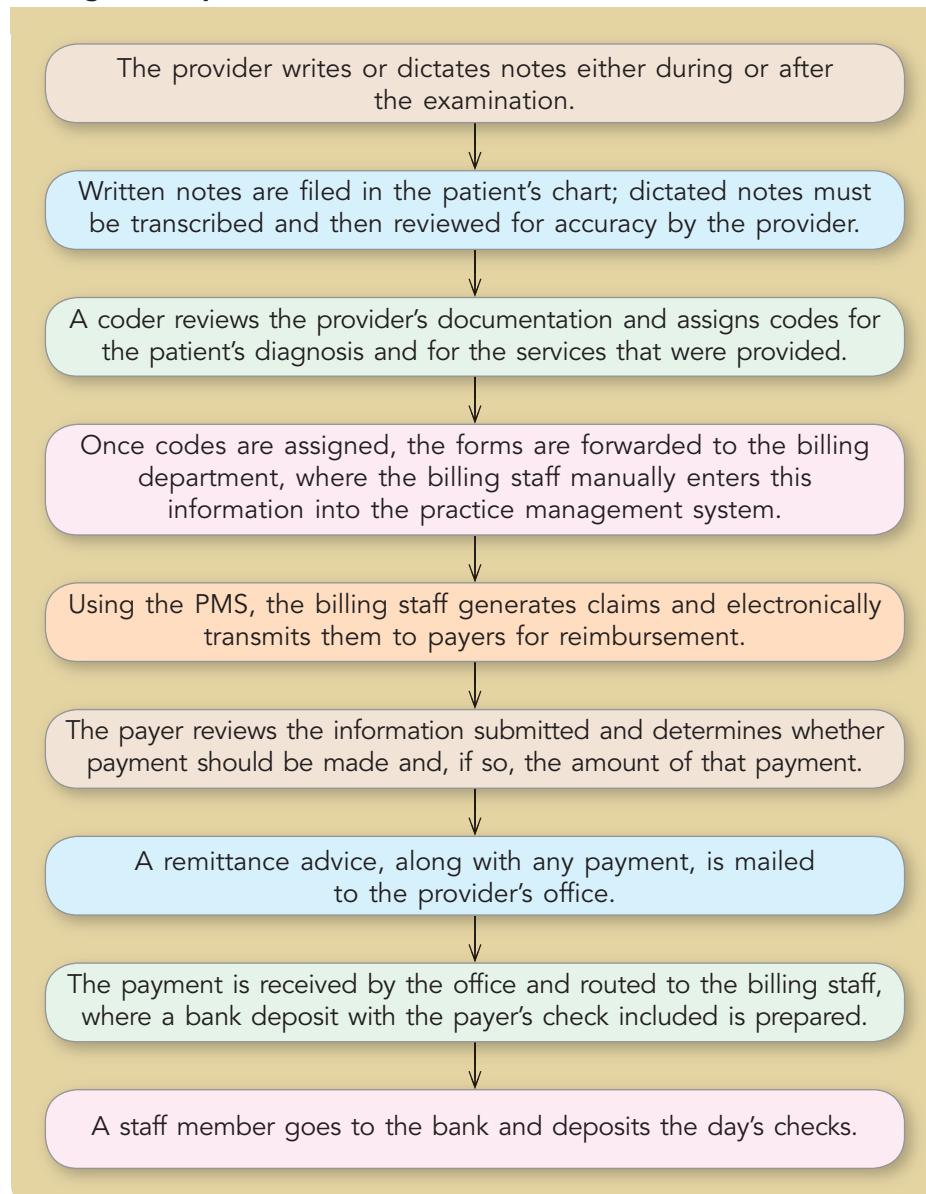
What Do You Think?

1. How many steps are saved in the electronic office?
2. How many steps must the medical assistant/front desk receptionist complete in the paper-based office? In the electronic office?
3. What steps must the patient perform in the electronic office that the medical assistant does in the paper-based office?
4. What is the greatest advantage for the patient in an electronic office? For the staff? For the physician?

Payers want to know whether the service provided was appropriate for the patient's condition and whether the treatment was necessary. If an asthmatic patient diagnosed with an upper respiratory infection receives a chest X-ray to rule out pneumonia, the payer probably will not question the claim. However, if the same patient receives an ankle X-ray, the claim will probably be rejected, since there is not a clear relationship between the diagnosis and the service provided. And while a chest X-ray would be common for the asthmatic patient, its medical necessity might be questioned if it was performed on a twenty-year-old with the same symptoms but no asthma. Since the codes assigned to diagnoses and services play a major role in whether a physician is paid, it is important to document and code as accurately as possible.

In an office that does not use software in the coding process, codes are assigned by a member of the coding staff. The typical sequence of the paper-based coding process is as follows:

Coding in a Paper-Based Office



In a paper-based office, the coding, billing, and reimbursement cycle normally takes anywhere from three to fourteen days. As a result, there is an extra time lag between when the service was provided and when the provider receives reimbursement. Also, it has been estimated that physicians lose as much as 10 percent of potential revenue as a result of forgetting to bill for services, losing patients' paperwork, making errors when preparing claims, and other reasons.

COMPUTER-ASSISTED CODING

In an effort to minimize the problems with paper-based coding and billing, some offices are using software that automates part of the coding process (see Figures 3-10 and 3-11). The process of coding

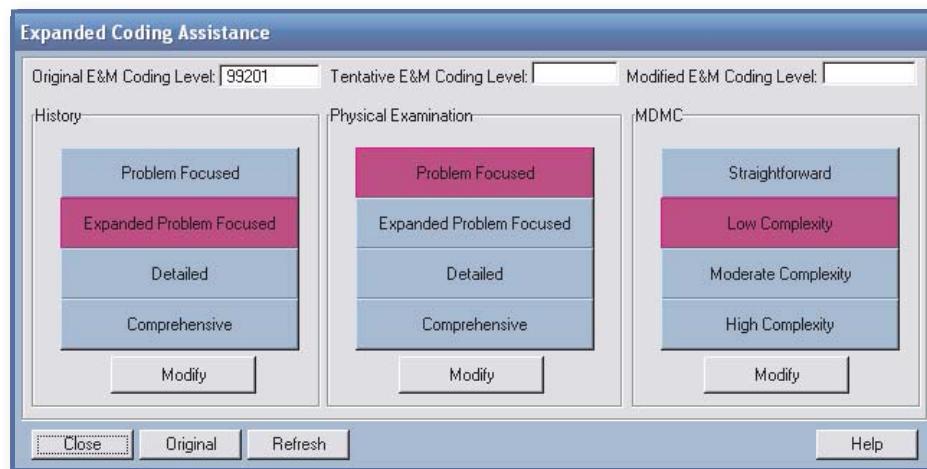


Figure 3-10

An evaluation and management visit tool in an EHR.

The figure shows an 'Electronic Encounter <Edit>' window for patient 'Robertson, Lee'. The top bar includes fields for 'Complete:', 'Provider' (Able Jr., Cobb B), 'Template' (EEF), 'Estimated Total Charges: \$85', 'Control #', 'Practice' (Central Medical Park), 'Appointment Date' (07/12/2007), and 'Appointment Time' (03: 01 PM). The main area has tabs for 'Procedures', 'Diagnoses', and 'Action Items'. The 'Procedures' tab displays a list of codes under categories like 'Office Visit', 'Consultation', 'Immunizations', and 'Laboratory'. The 'Diagnoses' tab shows a selected code: '99202 - [1] - OFFICE OUTPT NEW 20 MINUTES' and '786.50: UNSPEC CHEST PAIN'. Buttons at the bottom include 'OK', 'Cancel', 'Assign Dx', 'Post', and 'Account'.

Figure 3-11

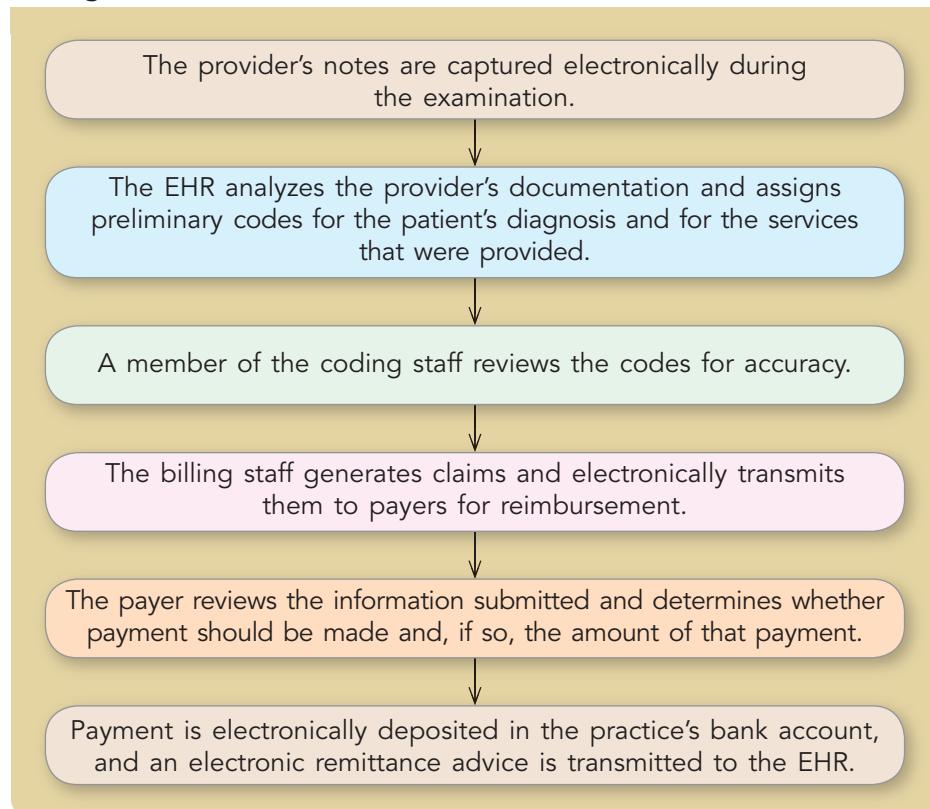
An electronic encounter form.

computer-assisted coding software that automates part of the coding process.

with software is known as **computer-assisted coding**. These software programs work in a variety of ways. Some assign codes based on keywords that are included in the template the provider uses when documenting the visit in the EHR. Other programs analyze words, phrases, and sentences in the electronic documentation to determine the appropriate codes. Once the codes have been suggested by the software, they are reviewed and verified by a professional coder. If the coder wants to review the documentation before finalizing the codes, the EHR provides fast access to the patient's chart. Once the codes are finalized, they are used by the billing staff to generate claims. The integration of automated coding with the billing system facilitates claim processing.

The coding process in an electronic office consists of the following steps:

Coding in a Electronic Office



Among the advantages of computer-assisted coding are that it:

- Ensures that documentation exists for services billed, since codes were assigned based on electronic documentation
- Aids in selection of appropriate codes
- Reduces the number of unbilled procedures due to lost or forgotten procedures
- Automatically enters codes in the practice management system (PMS) or EHR
- Reduces the time between the patient visit and the submission of the claim for payment, leading to more timely reimbursement

Clinical Tools in the Electronic Health Record

Electronic health records are much more than a computerized form of a paper medical record. In addition to streamlining the workflow in a physician practice, EHRs contain features that aid clinicians in providing patients with safe, effective health care. Some of the more common features are access to current clinical information while making a diagnosis, identifying patients at risk for a specific disease, and monitoring patients' compliance with prevention guidelines and recommended treatments.

To provide effective treatment to patients, providers need up-to-date information about diseases and their treatment options. This information is not static; it changes on a regular basis. At the same time it is changing, the volume of information is also expanding. Researchers are working on developing new treatments, and the availability of inexpensive computing facilities makes it easy to collect and process large amounts of data.

Today, physicians are faced with an overload of clinical information. This is especially true for family care and internal medicine providers, who require knowledge about a broad range of diseases. Since a provider cannot possibly read and retain such a large amount of clinical information, there is a significant lag between the time research discoveries are made and the time they are applied in clinical practice. The care given to patients is not always as effective as it would be if the latest scientific evidence were applied.

DECISION-SUPPORT TOOLS

Deciding on the best treatment for a patient requires not just information about the patient's current and past condition, but also access to the latest medical knowledge. **Decision-support tools**, a feature of many EHRs, make the latest clinical information available to providers at the point-of-care. While these tools are no replacement for the judgment of an experienced physician, their use may lower the number of medical errors and result in better patient outcomes.

decision-support tools computer-based program that make the latest clinical information available.

Consider an example of how a decision-support tool can assist a physician and lead to a more timely diagnosis. When a physician enters a patient's age, signs, and symptoms into the EHR, the software provides additional questions to ask the patient. Based on the patient's answers to these questions, the software offers a list of possible diagnoses, with the more likely ones listed first. Once the physician selects a diagnosis, the program lists the tests that should be performed to confirm or rule out the diagnosis as well as the latest advances in treatment options.

TRACKING AND MONITORING PATIENT CARE

In outpatient settings such as a physician practice, it is not always possible to know what actually happens once a patient leaves the office.

Often the doctor does not know whether the patient followed the care instructions. Did he get an X-ray of his left shoulder? Did she pick up the prescription? Did he go for a colonoscopy? While offices try to follow up on patients and determine whether they followed the care plan laid out by the doctor, it is difficult to follow up on all patients all the time. The electronic health record provides doctors with a greater ability to manage and track patients' care, since information from external sources is also available in electronic form. For example, radiology and laboratory facilities can send electronic reports to the physician office, and the reports become part of the EHR. Some pharmacies electronically alert a physician office when a prescription has not been filled within a certain amount of time.

SCREENING FOR ILLNESS OR DISEASE

A clinician can use an EHR to search patient records and determine whether individuals have received recommended preventive screenings for breast cancer, heart disease, and other conditions (see Figure 3-12). Patients who are not current with wellness screenings can be called or contacted by mail or e-mail with reminders to schedule the overdue tests. In an office with paper-based records, it is much more difficult to determine which patients are up-to-date with screenings and which are not, since it requires pulling and searching each patient's chart.

IDENTIFYING AT-RISK PATIENTS

Electronic health records (EHRs) are being used to help identify patients who are at risk for certain diseases. If individuals can be identified before they develop a disease, they may be able to take preventive measures to avoid developing the illness. In an office without an EHR, a provider would have to spend many hours reading patient charts to determine who might be at risk for certain

Figure 3-12

A list of recommended health maintenance screenings for a 50-64 year-old female.

Health Maintenance Templates For: Atherton, Rachel	
50-64 YEAR OLD FEMALES	
HM Procedure	Rule Summary
Height	Do every 5 years
Weight	Do every 2 years
Influenza vaccine	Do every year
Flex Sig	Do every 5 years
Cholesterol	Do every 5 years
Pap Smear	Do every 3 years
Mammogram	Do every year
F.O.B.	Do every year
Smoking Counseling	Do every 2 years
Depression	Do every 2 years



Screening for Cancer

While most Americans are aware that screening tests are available for a number of different cancers, they are not sure when they should be tested or, in some cases, which particular test is best.

Breast

The most common screening for breast cancer is a mammogram, which is an X-ray of the breast used to detect breast changes in women.

By the numbers:

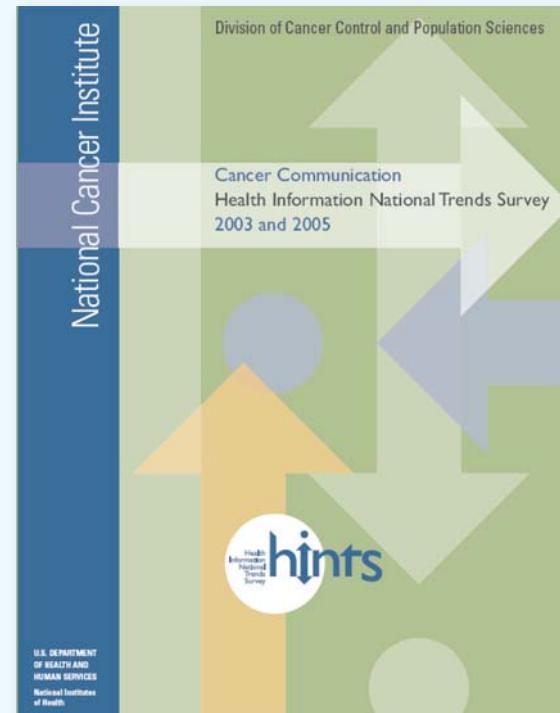
- 57 percent of American women are not aware that age forty is the recommended age to start getting mammograms.
- 73 percent know that they should get mammograms every one to two years after screening has begun.
- 75 percent of women over age thirty-five report that their health care provider has recommended a mammogram for breast cancer screening within the past year.

Colon and Rectum

A number of screening methods are available to detect colorectal cancer, including fecal occult blood tests (FOBT), double contrast barium enema, sigmoidoscopy, and colonoscopy. By giving patients a choice, physicians hope to increase the number of patients who get screened.

By the numbers:

- 54 percent know that screening for colorectal cancer should start at age fifty.
- 53 percent of respondents over age forty-five say that their health care provider has recommended screening for colorectal cancer.
- When asked to name tests that detect colorectal cancer, 40 percent of respondents were unable to come up with the name of one of the tests.



Source: *Health Information National Trends Survey (HINTS)*, hints.cancer.gov

conditions. With an EHR, it is much easier to develop a list of patients at risk for developing a specific disease. Taking into account factors such as a patient's age, gender, and family history as well as clinical examination results, the EHR identifies these patients and notifies the person responsible for scheduling appointments as well as the patients' providers.

For example, women with osteoporosis are at greater risk of fractures due to falls. To reduce that risk, a practice decided that all women at risk for osteoporosis should receive bone density scans every two years. Women who had not had bone density screenings in the last two years were sent letters and received telephone calls suggesting that they schedule the test. If a test showed signs of bone thinning, the patient was given medication to halt the progression of the disease. In this practice, the EHR plays a key role in identifying and treating potential problems before they become serious health issues.

MANAGING PATIENTS WITH CHRONIC DISEASES

chronic diseases prolonged conditions that rarely improve and often cannot be cured.

disease management (DM) systematic approach to improving health care for people with chronic diseases.

Diseases such as diabetes, depression, congestive heart failure, obesity, and asthma are considered chronic diseases. **Chronic diseases** are prolonged conditions that rarely improve and that often cannot be cured. **Disease management (DM)** is a systematic approach to improving the health of people with chronic diseases. Research has demonstrated that patient compliance with regular tests and treatments can reduce future complications and help delay progression of the disease.

In the physician practice, EHR contains tools that facilitate the ongoing management of chronic diseases, including alerts and reminders. Disease management requires tracking patients over time to monitor the course of the disease and the patients' compliance with treatment. An EHR can be set up to track individuals with chronic diseases, including sending a reminder to the patient when an appointment is near and alerting the provider when patients miss an appointment or a procedure such as a blood test.

IMPROVING THE QUALITY AND SAFETY OF PATIENT CARE WITH EVIDENCE-BASED GUIDELINES

clinical guidelines recommended patient care based on the best available scientific evidence.

The EHR makes it easy for physicians to identify all patients diagnosed with a specific disease and ensure that their care follows recommended clinical guidelines. **Clinical guidelines** are descriptions of recommended patient care for a given condition based on the best available scientific evidence. The content of a guideline is based on a systematic review of clinical evidence and is developed with consensus among experts in the field. For example, research has shown that patients with congestive heart failure respond well to treatment with beta blocker and ACE inhibitor medications. With an EHR in place, an alert can be set up to send a message to the provider with a list of all patients whose current treatment is not in compliance with the guideline.

For example, one of the clinical guidelines for the management of diabetes is that optimal care for patients ages eighteen to seventy-five requires meeting all of the following:

- › Annual screening for LDL with LDL less than 100 mg/dL
- › HbA1C screening within the last six months with a value less than 7 percent
- › Last recorded systolic blood pressure less than 130 mm
- › Documentation in the medical record that the patient does not use tobacco
- › Documentation that the patient regularly takes aspirin (if age forty or older)

The goal of a practice is to increase the number of diabetic patients who meet all requirements. To do this, the office must identify and monitor where their patients stand on each of the requirements. Using an EHR system, this would entail the following steps:

1. Search for all patients who have been diagnosed with diabetes.
2. Examine laboratory results in the EHR, and determine which patients' lab values do not meet the standards.
3. Contact these patients to schedule lab tests followed by office visits.

Some insurers and government programs offer physicians pay for performance incentives to increase the number of patients who meet care standards. One example is Medicare's voluntary Physician Quality Reporting Initiative (PQRI). Medicare-eligible providers who elect to participate and who meet quality measures receive a bonus payment of 1.5 percent of total allowed charges for covered Medicare physician fee schedule services. There is a maximum allowable bonus payment per year.

The Centers for Medicare and Medicaid Services developed a list of seventy-four quality measures. For example, Measure 56, Vital Signs for Community-Acquired Bacterial Pneumonia, looks at the percentage of patients eighteen or older diagnosed with community-acquired bacterial pneumonia whose vital signs have been documented in the medical record and reviewed by the clinician. To be eligible for the bonus, a provider must report on at least three of the seventy-four measures.

E-Prescribing and Electronic Health Records

According to *Preventing Medication Errors: Quality Chasm Series* (Institute of Medicine, 2006), errors in prescribing or taking medication harm 1.5 million Americans each year. Examples of errors include prescribing a drug that could interact with another medication the patient is taking, dispensing the wrong medication because the handwriting



Chapter 3 Online Discovery

The National Guideline Clearinghouse™ (NGC) is an online clearinghouse of evidence-based clinical guidelines that is updated on a weekly basis. The site contains more than two thousand documents created and updated by such leading health care organizations as the American Academy of Family Physicians, the American Academy of Pediatrics, the American Cancer Society, and the American Heart Association. Open a web browser and go to www.guideline.gov.

The screenshot shows the homepage of the National Guideline Clearinghouse (www.guideline.gov). At the top, there's a search bar with '20 Results' and a 'Search' button. Below the search bar are links for 'Search Help', 'Detailed Search', and 'Frequent Searches'. To the right of the search bar is the AHRQ logo. The main content area has a 'Welcome!' message. It mentions that users are connected to the National Guideline Clearinghouse™ (NGC), which is an initiative of the Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services. NGC was originally created by AHRQ in partnership with the American Medical Association and the American Association of Health Plans (now America's Health Insurance Plans [AHP]). It also links to the About NGC page. Below this, there's a section for 'What's New This Week' with bullet points about new guidelines from ACOG, AGAT, Kaiser Southern California, NYSDoh, NICE, and Singapore MOH, and a new submission from IDSA. There's also a section for 'Healthy People 2010' and 'Pandemic/Avian Flu Resources'. On the left sidebar, there are sections for 'Resources' (Annotated Bibliographies, Bioterrorism, Discussion List, EPC Reports, FAQ, Glossary, Guideline Resources, Hurricane Resources, New Features, NLM Links, Other Resources, PDA/Phar, Search Form, Web Developer Tools), 'Browse' (Disease / Condition, Treatment / Intervention, Measures / Tools, Downloadable, Guideline Index, Guidelines In Progress, Guideline Archive), and 'Compare' (View My Collection, Guideline Syntheses).

In the Search box on the left side of the window, enter *migraine* and click the Search button. Select a guideline from the list that appears, and read it by clicking the underlined words. After you have reviewed the guideline answer the questions below.

Thinking About It

1. Describe the type of information provided in the guideline you selected.

-
2. What group or organization wrote the guideline?

-
3. Is evidence listed to support the guideline? What type of evidence?

When you are finished viewing the website and answering the questions, close your web browser.

on the prescription was misread, and prescribing the wrong dose of a drug for a very young or very old patient. The IOM report suggests that many of these errors could be avoided if e-prescribing were adopted on a widespread basis and recommends the use of e-prescriptions by all providers and pharmacies by 2010.

The e-prescribing functions vary from one EHR to another, yet the ability to write a prescription and electronically transmit it to a pharmacy is a feature of most EHRs (see Figure 3-13). By writing prescriptions electronically, providers can avoid many of the mistakes that occur with handwritten prescriptions. Once a provider selects a drug for a patient, the EHR checks for drug allergies, drug-drug interactions, and other potential conflicts, using information in the patient's medical record, including past history, allergies, and a complete medication list.

The EHR also checks that the medication is in the formulary of the patient's health plan. A **formulary** is a list of pharmaceutical products and dosages deemed by a health care organization to be the best, most economical treatments for a condition or disease. Health plans reimburse patients for drugs listed in the formulary only, so it is essential for the provider to have this information before the patient leaves the office (see Figure 3-14 on page 98). If a medication is not in the formulary, the EHR can suggest an alternative drug. Since the medications in formularies change from time to time, the formulary data in the EHRs are updated regularly.

formulary pharmaceutical products and dosages deemed the best, most economical treatments.

Prescription: Taylor, Tim <New>

Rx Template Code:	GLUCOPX500	<input type="button" value="Lookup"/>	<input checked="" type="radio"/> by Template Code	<input type="radio"/> by Indication(s)
Rx Template Name:	GLUCOPHAGE XR 500 MG QD X 30D			
Date	Medication	Size	Take	
11/01/07	GLUCOPHAGE XR	500 MG	1 TAB	
Freq	Dur	Amount	Refills	Route
QD		30	2	ORAL
Print:	Print locally immediately	Prov:	ABC	Cobb B. Able
Indication 1:	<input type="button" value="Lookup 1"/>		Formulary:	
Indication 2:	<input type="button" value="Lookup 2"/>			
Note:	<input type="button" value="Details"/> <input type="button" value="Alternatives"/>			
Pharmacy:				
Extended Sig:	<input type="button" value="Code:"/> <input type="button" value="Lookup"/> <input type="checkbox"/> Create Big Template			
<input type="checkbox"/> Use Extended Sig <input type="checkbox"/> Limit Refills <input checked="" type="checkbox"/> Drug Interaction Check <input type="checkbox"/> New Rx Template				
<input type="checkbox"/> Use Extended Sig Only <input type="checkbox"/> Substitution OK <input checked="" type="checkbox"/> Allergy Check				
<input type="checkbox"/> Use Patient Instructions <input checked="" type="checkbox"/> Update Progress Note <input type="checkbox"/> Change Pharmacy <input type="checkbox"/> OTC				
Wholesale:	\$1.08 per unit.	Total:	\$32.40	Generic: (no price) per unit. Total: (no price)
Insurance Total:	(no price)			
<input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Alternative..."/> <input type="button" value="Dose Advisor"/> <input type="button" value="Eligibility"/> <input type="button" value="Help"/>				

Figure 3-13

An e-prescribing screen.

Figure 3-14

Partial list of medications available in a patient's health plan formulary.

Select Rx Template						
Template Code: BUP		Search		Template Code		Indications
		Insurance Formulary		General Formulary		
Insurance carrier: AETNA INSURANCE						
	Name	Rx/OTC	Generic	Ins. Cost	Wholes'l	Message
P	BLOCADREN 5MG BID X 30D			UNK	(no price)	
P	BRETHINE 2.5MG TID X 30D			UNK	(no price)	
P	BRETHINE 5MG TID X 30D			UNK	(no price)	
P	BUMEX 1MG 1TAB QD			UNK	(no price)	
P	BUPROPION 150MG BID X 30D			UNK	\$184.80 (T	
P	BUPROPION XL 150MG BID X 30D			UNK	(no price)	
P	CAFERGOT 1MG TABS			UNK	(no price)	
P	CALAN SR 180MG QD X 30D			UNK	\$53.40 (Tc	
P	CALAN SR 240MG QD X 30D			UNK	\$74.10 (Tc	
P	CAPOTEN 12.5MG TID X 30D			UNK	\$109.80 (T	

Some EHRs even check whether the medication is in stock at the patient's preferred pharmacy. It is much better to know that a drug is in stock before the patient goes to pick it up at the pharmacy. E-prescribing also gives the pharmacy time to prepare the prescription so the patient will not have to wait once he or she arrives.

KEEPING CURRENT WITH ELECTRONIC DRUG DATABASES

E-prescribing makes it easier for a physician to keep up with changes in the pharmaceutical field, such as new medications approved by the Food and Drug Administration (FDA) and medications recalled for safety reasons. The pharmaceutical company Merck voluntarily withdrew its arthritis and pain medication Vioxx from the market after a study found that taking the drug was associated with an increased risk of serious cardiovascular events. In a case like this, an EHR could rapidly identify all patients taking the drug and alert the staff to quickly notify them of the recall. The EHR also provides access to a database that suggests alternate medications to replace recalled drugs. Some EHRs have built-in medication databases, but most access external databases via the Internet. These databases are developed and maintained by companies that specialize in providing up-to-the minute drug information.

Because an EHR provides up-to-date drug reference information at the point-of-care, providers are able to get information that aids in deciding which medications to prescribe for a patient's condition. In



Privacy and Security Alert

Prescription Information Found in Dumpsters

In 2006, NBC-TV affiliate WTHR in Indianapolis visited the garbage dumpsters of sixty-five local pharmacies, including major chains such as CVS and Walgreens. While some were secured by locking mechanisms, most had no security in place. Investigators from the station collected plastic bags full of trash from each of the dumpsters and looked at the contents. Among other things, they found medications, prescriptions, and prescription labels. Investigators were able to find names addresses, and even phone numbers of people who take medication for depression and for genital herpes. Someone used information obtained from discarded records to enter the home of one woman and steal pain medication.



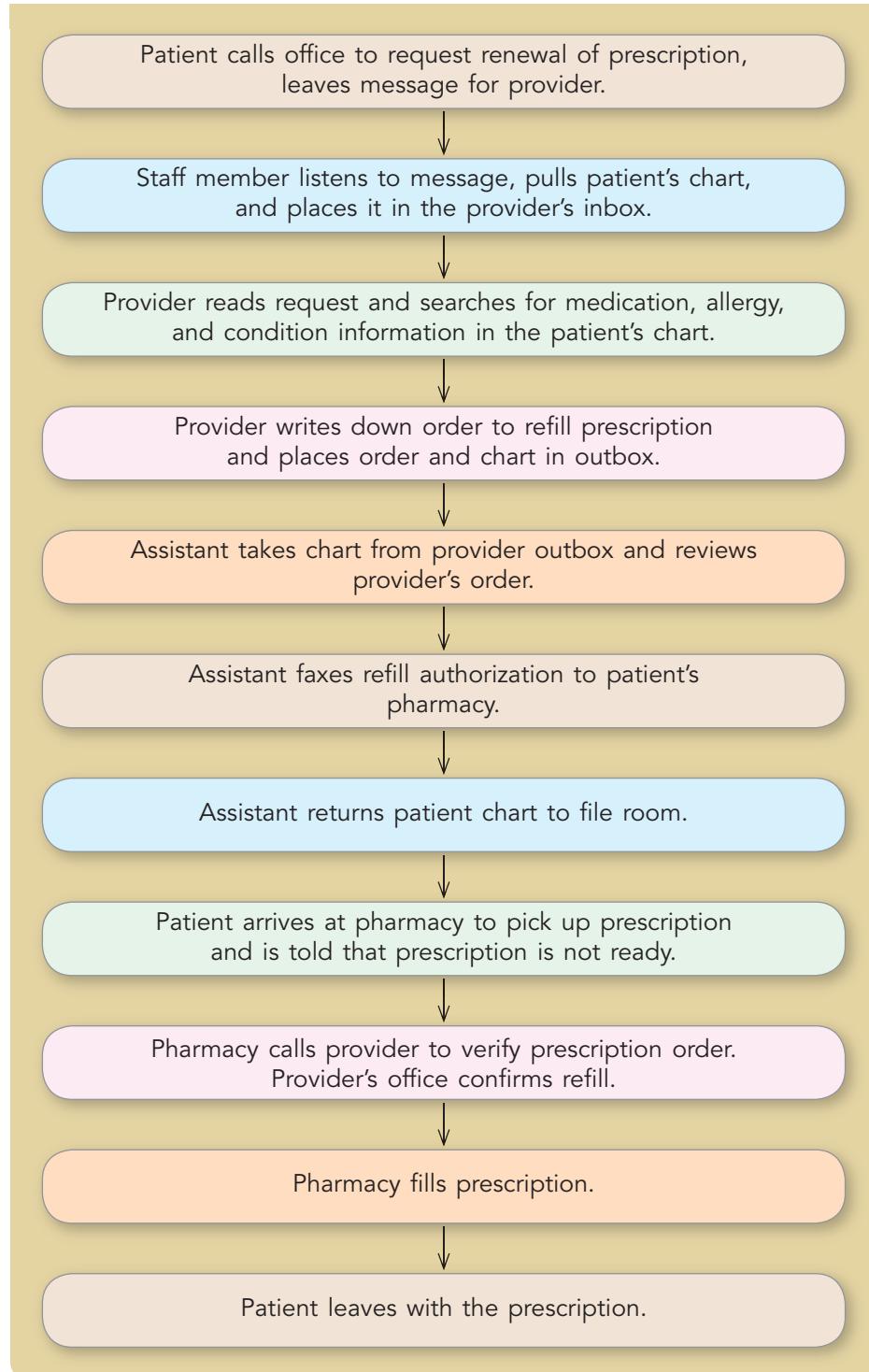
As a result of the investigation, the Indiana Board of Pharmacy filed complaints against thirty pharmacies. Several of the major pharmacy chains have already taken measures to comply with state and federal laws that require drugstores and health care providers to protect patient privacy. Walgreens is requiring locking dumpsters, while CVS employees must keep trash from the pharmacy in a certain area in the store, from where it will be picked up and taken to a regional facility for appropriate disposal.

The U.S. Department of Health and Human Services Office for Civil Rights, as well as the Indiana attorney general's office, have launched independent investigations as a result of WTHR's prescription privacy investigation to determine whether pharmacies featured in the reports should face fines or other penalties for improperly disposing of patient information.

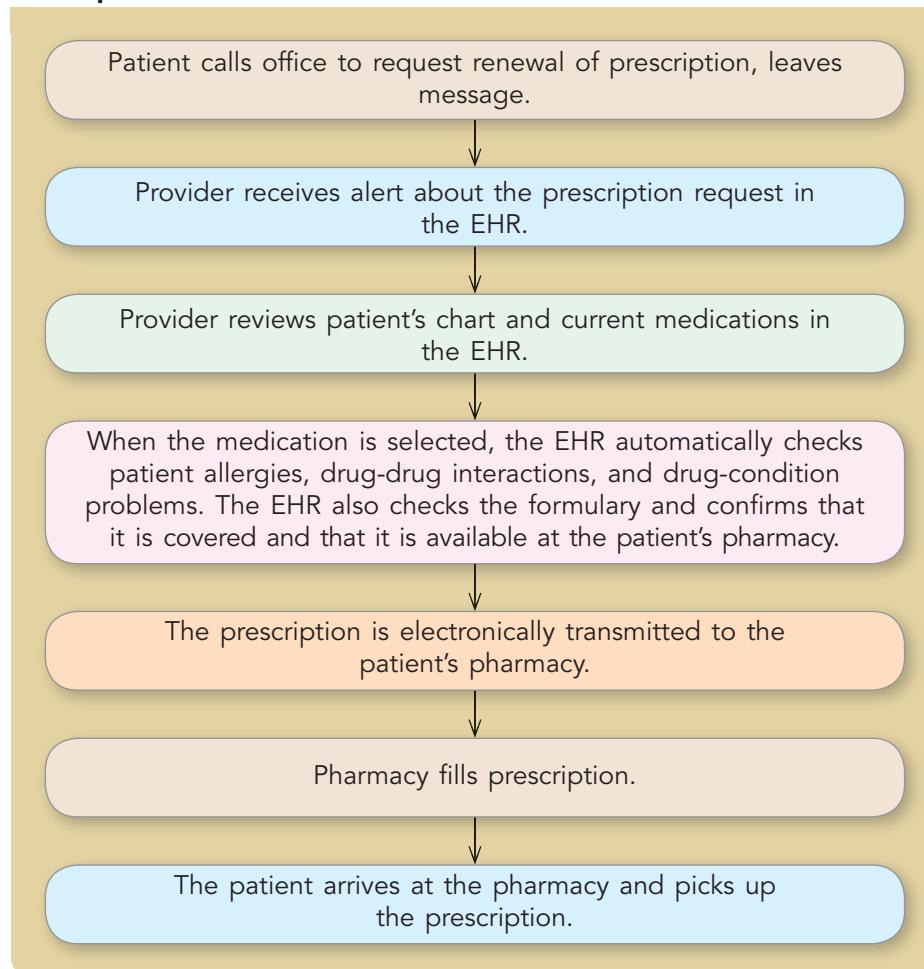
addition to information about dosage, side effects, interactions, and other data, these databases offer the latest clinical evidence on drug effectiveness.

The steps required to refill a patient prescription in a paper-based office and in an electronic office illustrate the advantages of e-prescribing:

Prescription Refill—Paper-Based



Prescription Refill—Electronic



INCREASING PRESCRIPTION SAFETY

One of the main advantages of e-prescribing is its ability to rapidly perform important safety checks. As the provider selects a new medication, the EHR provides real-time alerts about potential problems. Medication safety screenings performed by an e-prescribing module include drug-allergy conflict, drug-disease conflict, incorrect dosage, incorrect duration, drug-pregnancy conflict, drug-age conflict, drug-gender conflict, and drug-drug interaction.

Drug-Allergy Conflict

The drug-allergy screen identifies and creates warnings associated with the use of target drugs in patients with a history of hypersensitivity to the target drug or drug class.

Example A patient who is allergic to penicillin should not be prescribed the drug.

Drug-Disease Conflict

The drug-disease screen creates warnings about the use of select target drugs in patients with specified medical conditions.

Example A patient diagnosed with an eating disorder should not be prescribed the antidepressant Bupropion.

Incorrect Dosage

The incorrect drug dosage screen creates warnings when the prescribed dose for select target drugs falls outside the usual adult or pediatric range for common indications of the drug.

Example Acetaminophen with codeine should not be prescribed as three tablets every four hours.

Incorrect Duration

The incorrect duration of therapy edit screens select target drugs for usual maximum duration of therapy.

Example Amoxicillin should not be prescribed for more than fourteen days.

Drug-Pregnancy Conflict

The drug-pregnancy screen creates warnings about drug therapy that may be inappropriate for pregnant women.

Example A patient who is pregnant should not be prescribed tetracycline.

Drug-Age Conflict

The drug-age screen creates warnings on select target drug use in pediatric or geriatric patients.

Example A patient under the age of two should not be prescribed acetaminophen with codeine.

Drug-Gender Conflict

The drug-gender screen creates warnings about specific drug use in males or females. This screen identifies prescriptions submitted for target drugs labeled for use by one sex only.

Example A male patient should not be prescribed the oral contraceptive Depo-Provera.

Drug-Drug Interactions

Drug-drug interactions are potential adverse medical effects that occur when patients receive two or more specific drugs together.

Example A patient taking Warfarin should not be prescribed the antibiotic ciprofloxacin.

SAVING TIME AND MONEY

In addition to increasing the safety of prescribed medications, e-prescribing saves the medical practice time and money. Consider the steps required to complete a typical prescription refill request in a paper system and in an electronic system, as shown on pages 100–101.

The use of e-prescribing also saves the provider and the support staff time. Since the EHR checks for most potential medication incompatibilities before the prescription reaches the pharmacy, there are fewer calls from the pharmacy to clarify a prescription. There is also no need for a staff member to pull a patient chart when a request is made, since the patient's record is stored in the EHR, not on paper. Before formularies were available electronically, the support staff was required to manually check whether a drug was in a particular health plan's formulary.



CHAPTER REVIEW

CHAPTER SUMMARY

1. Regardless of whether an office is using EHR or paper-based records, the office visit workflow consists of five steps: pre-visit, pre-exam, exam, post-exam, and post-visit. While paper-based offices accomplish the same tasks, offices that use an EHR complete the tasks in less time, often with increased patient safety and health care quality.
2. During Step 1, pre-visit, a patient schedules an appointment and completes patient information forms online. This takes the place of filling out paper forms in the waiting room and saves time, since the office staff does not have to manually enter the patient's information into the billing program and file the paper forms.
3. Step 2 is completed at a computer in the waiting room. The patient confirms the demographic and insurance data he or she has already entered. The EHR checks insurance eligibility, and the patient has the option of making a copayment via computer or paying at the front desk. The medical assistant then escorts the patient to an exam room.
4. Step 3 consists of two parts. During the first phase, the medical assistant checks the patient's vital signs and gathers information relevant to the current visit as well as allergy and medication information. The MA enters this information in the EHR while the exam is taking place. In the second phase, the physician reviews the patient's chart in the EHR and examines the patient. The physician documents the visit by typing in free text or responding to templates that contain commonly used clinical words and phrases. Since data are entered while the physician is with the patient, it is less likely for information to be left out or forgotten, as sometimes happens when doctors wait until after the exam to record their observations and findings. Using an EHR allows the doctor to order tests and medications electronically, without the use of paper forms.
5. In Step 4, the patient stops at the front desk to pick up radiology or laboratory test orders, prescriptions, and educational materials. The front desk reviews the billing module of the EHR to see whether additional payment is due and schedules follow-up appointments before the patient leaves.
6. In Step 5, post-visit, two different tasks are completed. The coding staff reviews the codes assigned by the EHR, makes any required changes, and finalizes the codes. A member of the billing department uses the coding and visit information to prepare and submit an electronic claim to the patient's health plan. Reimbursement is electronically deposited into the practice's bank account. Also during Step 5, reports from radiology and

laboratory facilities arrive in electronic form and are reviewed by the physician. Any abnormal results are indicated by a special alert that appears on the physician's EHR screen.

7. Every service submitted for payment must be documented in the patient's medical record, including medical care, diagnostic tests, consultations, surgeries, and other services eligible for payment. To be reimbursed for services, the provider must document each service provided to the patient. Electronic health records contain tools that make it easier for clinicians to document patient encounters. With an EHR, physicians can efficiently document all the services they provide at the point-of-care, using structured templates, unformatted text, or a number of other choices. As a result, documentation is completed sooner, and the elimination of physician dictation means that there is no transcription expense.

Whether physicians are reimbursed for the services they provide is directly linked to the codes submitted to the payer on the insurance claim. When a payer receives a claim, the codes are reviewed. Payers want to know whether a service was appropriate for the patient's condition and whether the treatment was necessary. In a paper-based office, the coding, billing, and reimbursement cycle normally takes anywhere from three to fourteen days. The process of coding with software is known as computer-assisted coding. Initial codes are suggested by the software and are later reviewed and verified by a professional coder. The integration of automated coding with the billing system ensures documentation of services billed, aids in the selection of appropriate codes, reduces number of unbilled procedures, and shortens the time between a patient visit and receipt of reimbursement.
8. Electronic health records are much more than a computerized form of a paper medical record. In addition to streamlining the workflow in a physician practice, EHRs contain features that aid clinicians in providing patients with safe, effective health care. Some of these features include access to current clinical information at the point-of-care, decision-support tools that help confirm or rule out a diagnosis, ability to track patient compliance with care plans, ability to ensure that patients receive appropriate wellness screenings, identification of patients at risk for a specific disease, management of patients with chronic diseases, and evidence-based clinical guidelines to improve the quality of care.
9. The ability to write a prescription and transmit it to a pharmacy electronically, known as e-prescribing, is a feature of most EHRs. By writing prescriptions electronically, providers can avoid many of the mistakes that occur with handwritten prescriptions. E-prescribing also makes it possible to determine ahead of time whether a medication is included in the formulary of the patient's health plan. One of the main advantages of e-prescribing is its ability to rapidly perform important safety checks. As the provider selects a patient's new medication, the EHR provides real-time alerts about potential problems, including drug-allergy conflicts, drug-drug conflicts, and incorrect dosages. In addition

to increasing the safety of prescribed medications, e-prescribing saves the provider and the support staff time, with fewer calls from pharmacies to clarify prescriptions and no need to pull a patient chart when a refill request is made.

CHECK YOUR UNDERSTANDING

Part 1. Write *T* or *F* in the blank to indicate whether you think the statement is true or false.

- _____ 1. Some EHRs offer patients the option of making appointments on a website.
- _____ 2. With electronic check-in, the EHR verifies insurance eligibility without the assistance of the staff at the front desk.
- _____ 3. After the patient is escorted to the exam room, the medical assistant checks the patient's vital signs, gathers information relevant to the current visit, and enters this information in the EHR while the exam is taking place.
- _____ 4. The electronic entering and tracking of laboratory and radiology tests eliminates the need to pull a patient chart, file the result, and route the chart to the physician.
- _____ 5. With computer-assisted coding, a coder must still review documentation and finalize procedure and diagnosis codes.
- _____ 6. Disease management is a method of screening to determine which patients are at-risk for a certain disease.
- _____ 7. A formulary's main function is to check for interactions between the patient's current medication and the newly prescribed medication.
- _____ 8. Clinical guidelines are based on scientific evidence.
- _____ 9. Templates enable providers to document patient encounters more efficiently.
- _____ 10. The history of present illness (HPI) is an inventory of body systems in which the patient reports any symptoms experienced.
- _____ 11. Clinical tools help physicians manage large amounts of information.
- _____ 12. Most EHRs offer more than one method of documenting a patient encounter.

Part 2. In the space provided, write a definition of the term.

13. Chronic diseases

14. Clinical guidelines

15. Computer-assisted coding

16. Decision-support tools

17. Disease management

18. Formulary

19. Point-of-care

THINKING ABOUT THE ISSUES

Part 3. In the space provided, write a brief paragraph describing your thoughts about the following issues.

20. In practices using EHR, websites offer new ways to collect patient information. Patients complete such information as demographic and insurance information, medical history, current condition, and lifestyle. This offers several advantages to the patient, the office staff, and the physicians. However, many patients are reluctant to enter data on the website. Why do you think this is the case?

21. EHRs contain features that aid clinicians in providing patients with safe, effective health care. Some of the more common features include access to current clinical information when making a diagnosis, identifying patients at risk for a specific disease, and monitoring patients' compliance with prevention guidelines and recommend treatments. Yet many physicians have been slow to take advantage of these features. Why do you think this is the case?